

REMARKS

This paper is responsive to the Office Action dated November 16, 2006 (the "Office Action").

Claims 1-21 were previously pending in the application. No claims have been canceled. New claims 22-32 have been added. Accordingly, claims 1-32 are now pending.

Claims 1-21 stand rejected.

The amendments add no new matter. Support for the above amendments may be found, for example, in the Specification as originally filed, in the Appendix; in the original claims; and in the discussion at pp. 17-26 (e.g., p. 5, lines 10-27; p. 17, lines 1-3; p. 6, lines 23-28), and in the parent application (No. 09/412,560, which was incorporated by reference into the present application) at p. 1, lines 13-15; p. 5, lines 2-8; p. 6, lines 3-9 and 17-19; and p. 22, lines 23-28.

Applicant respectfully submits that the claims are allowable, and requests reconsideration of the pending rejections in view of the above amendments and the following remarks.

Allowable Subject Matter

Applicant expresses gratitude for the indication that claims 11 and 15 would be allowable if rewritten to overcome the rejections under 35 U.S.C. § 112, second paragraph, and to include all of the limitations of the base claim and any intervening claims. Applicant wishes to maintain claims 11 and 15 in dependent form in view of the following remarks.

Objection to the Specification

The Office Action includes an objection to the Specification. In particular, the Office Action objects to the presence of equations in an appendix. The Specification has been amended to include these equations in the body of the Specification, and the appendix has been deleted. Applicant respectfully requests that the objection to the Specification be withdrawn in view of these amendments.

Rejections under 35 U.S.C. § 101

Claims 1-21 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Applicant respectfully submits that the claims are allowable under § 101.

For example, with regard to claim 1, the Office Action argues on pp. 2 and 3 that the claims do not produce a real world result because “there is no recitation that [the optimum level of resources] is output, displayed, or used in the real world to accomplish a practical application.” Applicant respectfully disagrees.

Claim 1 includes optimizing a multivariate representation of resources and determining an optimum level of resources. Even without further details on how the optimal level of resources is used, Applicant respectfully submits that the claim presents steps that are usable in a real world application, since the level of resources that is determined is an “optimal” level. The various recited limitations describe a particular technique usable to achieve this optimization, and a person having ordinary skill in the art would understand the optimal level of resources as providing various advantages in various situations. For example, on pp. 5 and 6, the Specification sets forth examples such as the creation or acquisition of products such as manufactured products, development products, and financial assets. These activities require the

expenditure or consumption of resources such as components, manpower, and liquid capital. In various situations, the optimization described in Applicant's claim 1 is usable "to provide the proper amount of resources to produce a desired level of refinements" (Specification at 5, lines 23-25). In some situations, a decision maker faces the challenge of best using resources in the face of uncertainty in demand for products and other factors. In order to decide how best to use available resources, the decision maker "might desire to know how to best allocate . . . resources over the various projects in order to maximize revenues in the face of the aforementioned uncertainties" (Specification at 6, lines 1-3).

In view of these observations regarding the practical applications of claim 1, Applicant respectfully submits that claim 1 provides a real world result that is usable to accomplish a practical application.

Nonetheless, to further prosecution, Applicant has amended claim 1 to include an act of "presenting the optimum level of resources as a function of the solved for maximums."

The Office Action also argues on p. 3 that:

claim 1 does not recite the specific value function utilized in the method. Thus, different users would build different models to represent the resources and arrive at completely different results, and therefore the invention is not substantially repeatable and/or does not re-produce the same results.

The Examiner is correct in noting that the method of claim 1 is usable in different situations by users who may customize the inputs to the method. The customization allows different users to appropriately model different considerations that need to be addressed in

different situations. Depending on the implementation of claim 1, one of the inputs to the method may be the expected value function that is used to describe the particular situation being addressed by a user. Accordingly, in such implementations, is not a detriment that the user is allowed to specify the appropriate expected value function. Applicant respectfully submits that, when properly implemented by a person having ordinary skill in the art in view of the teachings of the Specification, the method of claim 1 produces substantially repeatable results when provided with repeated instances of the same input. Accordingly, the method of claim 1 is a substantially repeatable method.

At least for these reasons, Applicant respectfully submits that independent claim 1 and all claims dependent therefrom are allowable under § 101. At least for similar reasons, Applicant respectfully submits that independent claims 12 and 21 and all claims dependent therefrom are allowable under § 101.

Rejections under 35 U.S.C. § 112, second paragraph

Claims 11 and 15 stand rejected under § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Office Action requests clarification of the use of an inverse Cholesky transformation.

Claim 11 depends on claim 10, which includes a transformation in which “the distribution induced on the resources is transformed into a distribution with zero mean and unit variance.” One implementation of this operation is described in the parent application (No. 09/412,560, which was incorporated by reference into the present application), which describes a transformation of variables representing demands for products on p. 22, lines 23-28.

This transformation operates on a covariance matrix that describes the variability or uncertainty in the demands for the products. The transformation produces a covariance matrix which is diagonal. A particular example of a tool that can be used to achieve this result is a Cholesky decomposition. (U.S. Patent Application No. 09/412,560 at 22, lines 23-28.)

Applicant respectfully submits that in view of these observations, a person having ordinary skill in the art would not find claim 11 to be indefinite. Applicant respectfully submits that claim 11 is therefore patentable under § 112, second paragraph. At least for similar reasons, Applicant respectfully submits that claim 15 is also patentable under § 112, second paragraph.

Rejections under 35 U.S.C. § 102(b)

Claims 1-10, 12-14, and 16-21 stand rejected under § 102(b) as being anticipated by F. S. Hillier and G. J. Lieberman, *Introduction to Operations Research*, 6th ed., McGraw-Hill, Inc., 1995 (“*Hillier*”). Applicant respectfully submits that the claims are allowable because the cited portions of *Hillier* fail to disclose each limitation of the claims.

Claim 1 includes “examining the elemental blocks to determine if a first element has not been loaded with a corresponding first resource that gates production of the first element.” With regard to this limitation, the Office Action cites pages 571, 592-594, and 596-597 of *Hillier*.

Applicant respectfully submits that the particular parts of the cited references that the Office Action has relied upon have not been designated as nearly as practicable, as required by 37 C.F.R. § 1.104(c)(2). In particular, the Office Action does not clearly indicate what portion of *Hillier* is to be seen as corresponding to Applicant’s “**first resource that gates production.**” Nevertheless, the Applicant has made every effort to respond to the rejections outlined by the Office Action.

The cited portions of *Hillier* provide introductions to techniques of Separable programming and Nonconvex programming, concave profit curves, and the rewriting of piecewise linear functions as linear functions. The cited portions also present an example of a linear programming model applied to a particular production situation.

However, the cited portions of *Hillier* do not describe “examining the elemental blocks to determine if a first element has not been loaded with a corresponding first resource that gates production of the first element.” Applicant respectfully submits that at least for this reason, claim 1 and all claims dependent therefrom are allowable under § 102(b). At least for similar reasons, Applicant respectfully submits that claims 12 and 21 and all claims dependent therefrom are also allowable under § 102(b).

New claims 22-32

New claim 22 also includes various limitations that are not disclosed in the cited portions of *Hillier*. For example, claim 22 includes:

for each transformed refinement quantity among the set of refinement quantities:
 identifying at least one gating resource, among the plurality of resources, that
 limits the transformed refinement quantity,
 in response to the identifying, constructing a single-variable relationship between
 a constituent of the output value and a single variable, wherein the
 constituent of the output value, the single-variable relationship, and the
 single variable correspond to the transformed refinement quantity, and
 optimizing the constituent of the output value based on the single-variable
 relationship.

As another example, new claim 30 includes a transforming that “relates to a transformation that changes the means to zero and that diagonalizes the covariance matrix.”

These limitations, as set forth with other limitations in the various new claims 21-30, are not disclosed in the cited portions of *Hillier*. Claims 31 and 32 depend on claim 1, and are therefore allowable at least for the reasons described above.

CONCLUSION

Applicant submits that all claims are now in condition for allowance, and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is invited to telephone the undersigned.

Respectfully submitted,



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